



## Work Instruction (WI)

**DIRECTIVE NO.** 500-WI-8719.1.1  
**EFFECTIVE DATE:** 04/22/2013  
**EXPIRATION DATE:** 04/22/2018

**APPROVED BY Signature:** Original signed by:  
**NAME:** Dennis Andrucyk  
**TITLE:** Director of AETD

### COMPLIANCE IS MANDATORY

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**Responsible Office:** 500/Mechanical Systems Division

**Title:** Test and Inspection of Overhead Cranes

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## PREFACE

### P.1 PURPOSE

The purpose of this procedure is to define the process and controls for performing test and inspection of overhead cranes, herein referred to as cranes. This procedure replaces any previous procedure for inspecting a bridge crane, monorail crane, or stationary electric hoist.

### P.2 APPLICABILITY

This document covers all equipment and facilities that fall under the GSFC LDE Program.

### P.3 REFERENCES

NASA-STD-8719.9, NASA Standard for Lifting Devices and Equipment

GPR 1700.5, Control of Hazardous Energy (Lockout/Tagout)

GPR 8719.1, Certification and Recertification of Lifting Devices and Equipment

GPR 8834.1, Lifting Operations Requirements

OSHA Safety and Health Standards Part 1910, Title 29 of CFR, U.S. Department of Labor, Occupational Safety and Health Administration, Latest Revision

ASME B30.2, Overhead and Gantry Cranes (Top Running Overhead, Single or Multiple Girder, Top Running Trolley Hoist), Latest Revision

ASME B30.10, Hooks, Latest Revision

ASME B30.11, Monorails and Underhung Cranes, Latest Revision

ASME B30.16, Overhead Hoists (Underhung), Latest Revision

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ASME B30.17, Overhead and Gantry Cranes (Top Running Overhead, Single Girder, Underhung Hoist), Latest Revision

ASNT-SNT-TC-1A, American Society for Nondestructive Testing – Society for Nondestructive –Technical Council – 1A (ASNT-SNT-TC-1A)

500-PG-8715.1.2- Applied Engineering and Technology Directorate Safety Manual, Section 3.8 Lockout/Tagout

Original Equipment Manufacturer Manuals

540-WI-8719.1.1, “Certification and Recertification of Lifting Devices and Equipment (LDE)”

LDE-PROC-0009, “GSFC Lifting Devices and Equipment Program Numbering and Tagging Procedure”

#### **P.4 CANCELLATION**

Not Applicable

#### **P.5 TOOLS, EQUIPMENT, AND MATERIALS**

As specified in this procedure

#### **P.6 SAFETY PRECAUTIONS AND WARNINGS**

As specified in this procedure

#### **P.7 TRAINING**

Only qualified personnel who are designated as a result of formal training and/or experience and listed in the LDE support contract training database shall perform the procedures listed herein.

#### **P.8 RECORDS**

Record Title	Record Custodian	Retention
LDE procedures	LDE Supervisor	Permanent – pending approval of record schedule.
Test and Inspection Report	LDE Supervisor	Per NPR 1441.1, Permanent – pending approval of record schedule.
Calibration Records	LDE Supervisor	Per NPR 1441.1, Destroy 5 to 10 years after the equipment is excessed or no longer in NASA inventory.

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\* *NRRS – NASA Records Retention Schedule (NPR 1441.1)*

## **P.9 MEASUREMENT/VERIFICATION**

The Lifting Devices and Equipment Manager (LDEM) shall review this procedure upon renewal or in the event of a mishap to determine its effectiveness.

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In this document, a requirement is identified by “shall,” a good practice by “should,” permission by “may” or “can,” expectation by “will,” and descriptive material by “is.”

## 1.0 Scope

This procedure defines the test and inspection process and elements for overhead cranes used at Goddard Space Flight Center and Wallops Flight Facility.

### 1.1. Categories of inspections:

- 1.1.1. Frequent and Periodic as defined in NASA-STD-8719.9
- 1.1.2. Proof Load Tests
- 1.1.3. Periodic Load Tests
- 1.1.4. Non-Destructive Inspection (NDI)

### 1.2. Safety requirements for the test and inspection process

### 1.3. Tagging of devices

### 1.4. Test and inspection document control

### 1.5. Test and inspection report format

Note: Daily inspections in accordance with the Lifting Device Operator Daily Crane and Hoist Inspection and Limit Switch Test Procedure are the responsibility of the owner/operators and are therefore not included in the scope of this procedure.

## 2.0 Authority and Responsibility

### 2.1 LDE Manager (LDEM)

- Approve waivers
- Approve Work Instruction
- Review and approve Periodic test and inspection reports

### 2.2 LDE Lead (GSFC) / LDE Engineer (WFF)

- Assign qualified personnel to perform this process
- Ensure tests and inspections are performed in accordance with this procedure and on-schedule
- Ensure measurement equipment in calibration

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- Notify owner/operator or designee of deficiencies found

### 2.3 LDE Inspector

- Coordinate the inspection with device owner
- Implement the test and inspection
- Perform lockout-tag-out process, if required
- Appropriately tag the device per inspection results
- Complete test and inspection report and submit for approval in the LDE database

## 3.0 Procedure

### 3.1 Pre-Test and Inspection Administrative Activities

#### 3.1.1 Scheduling of test and inspection activities

The inspector will coordinate inspections with owner/operators. The crane's tests and inspections will be scheduled in accordance with LDE Database as shown in Table

1.0:

Table 1.0

Inspection Activity	Critical Lift Cranes	Non-Critical Lift Cranes
Frequent Inspections	Monthly	Monthly
Periodic Inspections	Yearly	Yearly
Proof Load Test (125% WLL)	When new or after modification/repair to mitigate potential impact to personal safety or mission accomplishment (schedule and objectives)	When new or after modification/repair to mitigate potential impact to personal safety or mission accomplishment (schedule and objectives)
Periodic Load Test (100% WLL)	Yearly	Every four years
NDI	Post-Load Test Suspicion of cracks	Post-Load Test Suspicion of cracks

### 3.2 Pre-Test and Inspection Operational Activities

The test and inspection report will be used to record the calibration equipment used, the tests performed, and the test and inspection results. The inspector will prepare the test and

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inspection report by completing the header information, identifying the tests to perform, and inserting the measurement parameters; e.g., the date of the last load test. The type of tests or inspections to perform is based on Table 1.0.

### 3.3 Personnel Safety Requirements

The following safety requirements shall be followed:

#### 3.3.1 Required Safety Equipment

3.3.1.1 Personal Protective Equipment (PPE), as required

3.3.1.2 Safety signs, stanchions and rope, as required

#### 3.3.2 Secure work area, installing caution rope and warning signs, as appropriate

### 3.4 Perform Test and Inspection

The inspector will perform the tests and inspections in accordance with procedures listed in Appendices. All test and inspection results will be logged into the test and inspection report and uploaded to the LDE Database. The report will be forwarded through the approval chain for review and approval.

### 3.5 Deficiency Activities

- 3.5.1 If one of the inspection or test parameters is determined to be deficient, the inspector will determine if it is safe to perform the remainder of inspections and tests. If it is determined to be safe, the remaining tests and inspections will be performed.
- 3.5.2 If performing the remaining inspections jeopardizes personnel or equipment, the inspection process will be terminated.
- 3.5.3 A crane with a deficient inspection or test finding will be tagged-out or locked out in accordance with GPR 1700.5 if deemed necessary by the LDE Lead and/or inspector. In addition, the inspector will notify the owner/operator of the deficiency.
- 3.5.4 The inspector will log the date, deficiency, and actions taken in the device log book and issue the test and inspection report through the approval chain. The LDE Lead or LDE Engineer will issue a deficiency report to the LDEM and crane owner/operator and upload it to the LDE database. The LDE supervisor and/or LDE engineer, as

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required, can determine how the deficiency can be rectified and what inspections are required to tag the crane acceptable for use.

### 3.6 Tagging

- 3.6.1 If the device is determined to meet the requirements for the device's classification, the inspector will tag the device immediately after completion of the tests and inspections. Tagging shall be done in accordance with LDE-PROC-0009, "GSFC Lifting Devices and Equipment Program Numbering and Tagging Procedure".
- 3.6.2 If the LDEM, upon final review of the inspection report, determines the device should not be in use, the LDEM will notify the LDE Supervisor, who will immediately ensure the device is tagged out of service.

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## **Appendix A – Definitions**

- A.1 Nondestructive Inspection - The development and application of technical methods to examine materials or components in ways that do not impair future usefulness and serviceability in order to detect, locate, measure, and evaluate flaws; to assess integrity, properties, and composition; and to measure geometrical characteristics.
- A.2 Periodic Load Test - A load test performed at predetermined intervals with load greater than or equal to the rated load, but less than the proof load.
- A.3 Proof Load Test - A load test performed prior to first use, after major modification of the load path or at other prescribed times. This test verifies material strength, construction, and workmanship and uses a load greater than the rated load. Proof load test, as used in this standard, is equivalent to the OSHA rated load test.

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## **Appendix B – Acronyms**

ASME	American Society of Mechanical Engineers
GPR	Goddard Procedural Requirement
LDE	Lifting Devices and Equipment
LDEM	Lifting Devices and Equipment Manager
NDI	Nondestructive Inspection
OSHA	Occupational Safety and Health Administration

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## **Appendix C – Inspection Procedure and Reports**

### **Overhead Cranes**

1. Frequent Inspection (Examine for)
  - 1.1. Hoist
    - 1.1.1. Operating mechanisms for proper operation, proper adjustment, and unusual sounds
    - 1.1.2. Hoist upper limit device of electric- or air-powered hoists, without a load on the hook. Care shall be exercised. The load block shall be inched into its limit device or run in a slow speed on a multi-speed or variable-speed hoist.
    - 1.1.3. Hoist braking system for proper operation.
    - 1.1.4. Lines, valves, and other parts of air systems for leakage.
    - 1.1.5. Hook (See paragraph 1.6 below).
    - 1.1.6. Hoist rope (See paragraph 1.7 and 1.1.9).
    - 1.1.7. Hoist load chain (See paragraph 1.1.10).
    - 1.1.8. Rope or load chain reeving for compliance with recommendations of the hoist manufacturer.
  - 1.2. Operating mechanisms of the trolley and bridge for proper operation, proper adjustment, and unusual sounds; such as, but not limited to, squeaking, grinding, grating, etc. Verify by measurement that the distance between treadwheel flanges is within 1/8" to 1/4" greater than the width of the beam flange.
  - 1.3. Tanks, valves, pumps, lines, and other parts of air or hydraulic systems for leakage, if applicable
  - 1.4. Warning devices for proper operation
  - 1.5. Placement of end stops.
  - 1.6. Load Hook and Suspension Hook Removal Criteria (Semi-permanent and inaccessible locations where frequent inspections are not feasible shall only have periodic inspections performed). (Examine for)
    - 1.6.1. Missing or illegible hook manufacturer's identification
    - 1.6.2. Missing or illegible rated load identification

- 1.6.3. Hook attachment and securing means
- 1.6.4. Excessive pitting or corrosion
- 1.6.5. Cracks, nicks, or gouges
- 1.6.6. Wear – any wear exceeding 10% of the original section dimension of the hook or its load pin
- 1.6.7. Deformation – any visibly apparent bend or twist from the plane of the unbent hook
- 1.6.8. Throat opening – any distortion causing an increase in throat opening of 5% not to exceed ¼”
  - 1.6.8.1. For all new installations measure the hook throat opening between pre-determined marks.
  - 1.6.8.2. Calculate 105% of the throat opening and the throat opening plus 0.250”. The lesser of the two is the maximum allowable throat opening.
  - 1.6.8.3. For each subsequent inspection measure the hook throat opening between the same pre-determined marks. If this opening exceeds the maximum allowable throat opening, replace the hook.
- 1.6.9. Inability to lock – any self locking hook that does not lock
- 1.6.10. Hook latches for proper operation
- 1.6.11. Inoperative latch – any damaged latch or malfunctioning latch that does not close the hook’s throat
- 1.6.12. Damaged, missing, or malfunctioning hook attachment and securing means
- 1.6.13. Thread wear, damage, or corrosion
- 1.6.14. Evidence of excessive heat exposure or unauthorized welding
- 1.6.15. Evidence of unauthorized alterations such as drilling, machining, grinding, or other modifications

## 1.7. Hoist Rope

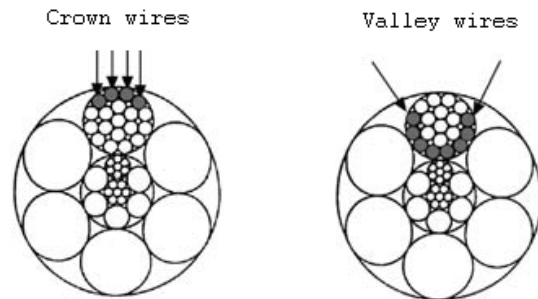
- 1.7.1. Visually examine wire rope for discrepancies, broken wires, wear, distortion, heat damage, and corrosion. See Figure A1.0, Crown Wires vs. Valley Wires. One valley break is cause for rejection of a wire rope. Crown break replacement criteria follow:
  - 1.7.1.1. In running ropes, twelve randomly distributed broken wires in one rope lay or four broken wires in one strand in one rope lay.

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- 1.7.1.2. In rotation-resistant rope, two randomly distributed broken wires in six rope diameters or four randomly distributed broken wires in thirty rope diameters.

Figure A1.0, Crown Wires vs. Valley Wires



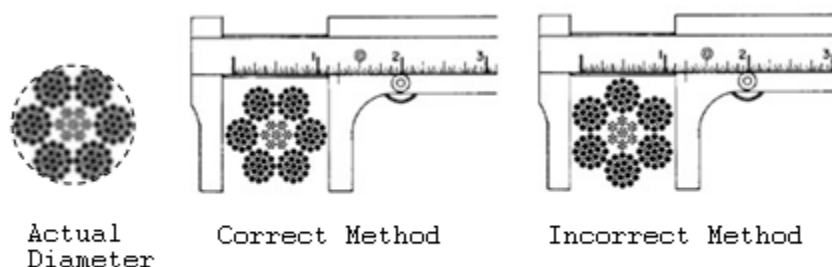
Wire break allowances are based on crown wire breaks. Remove the rope from service even if you find a SINGLE individual wire break which originates from inside of the rope aka a valley break. These valley breaks have shown to be the cause for unexpected complete rope failures.

- 1.7.2. Wire rope end connectors for cracks, deformation, or evidence of rope pullout.

- 1.7.3. Measure the wire rope diameter.

- 1.7.3.1. For all new installations, measure the circle that just touches the extreme outer limits of the strands, by positioning the inside jaws of the caliper across the top of the strands. Take three measurements and record the maximum value. See Figure A2.0, How to Measure Wire Rope.
- 1.7.3.2. Calculate 95% of original measured diameter. This is the minimum allowable diameter.
- 1.7.3.3. For each subsequent inspection measure the wire rope nominal diameter, as described above, and record to three (3) decimal places. Also record the ID number and the calibration due date for the measuring instrument used. If the wire rope nominal diameter reduces in size, so that it is less than 95% of the original measured diameter, replace the wire.

Figure A2.0, How to Measure Wire Rope



- 1.8. Hoist Rope for Bridge Cranes

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- 1.8.1. Visually examine along entire length of rope, wire rope for discrepancies, broken wires, wear, distortion, heat damage, and corrosion. See Paragraph 1.1.8.
- 1.8.2. Wire rope end connectors for cracks, deformation, or evidence of rope pullout.
- 1.8.3. Measure the wire rope diameter.
  - 1.8.3.1. For all new installations, measure the circle that just touches the extreme outer limits of the strands, by positioning the inside jaws of the caliper across the top of the strands. Take three measurements and record the maximum value. See Figure A2.0, How to Measure Wire Rope.
  - 1.8.3.2. Calculate 95% of original measured diameter. This is the minimum allowable diameter.
  - 1.8.3.3. For each subsequent inspection measure the wire rope nominal diameter, as described above, and record to three (3) decimal places. Also record the ID number and the calibration due date for the measuring instrument used. If the wire rope nominal diameter reduces in size, so that it is less than 95% of the original measured diameter, replace the wire.

## 1.9. Hoist Load Chain

- 1.9.1. Test the hoist under light load (20-50 lbs) in lifting and lowering directions and observe the operation of the chain and sprockets. The chain should feed smoothly into and away from the sprockets.
- 1.9.2. If the chain binds, jumps, or is noisy, first see that it is clean and properly lubricated. If the trouble persists, inspect the chain and mating parts for wear, distortion, or other damage.
- 1.9.3. Examine visually for gouges, nicks, weld spatter, corrosion, and distorted links. Slacken the chain and move the adjacent links to one side to inspect for wear at the contact points.
- 1.9.4. Measure the load chain.
  - 1.9.4.1. Select an unworn, un-stretched length of the chain (e.g. at the slack or dead end).
  - 1.9.4.2. Suspend the chain vertically under tension of a light load (20 – 50 pounds) and using a caliper-type gauge measure the outside length of the number of links specified in Table A2.0, Chain Measurement Parameters Table.
  - 1.9.4.3. Calculate 101.5% of this length. This is the maximum length for any given section of the chain.
  - 1.9.4.4. Measure the same number of links in a used section of the chain using

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- the same process.
- 1.9.4.5. Permanently mark this section of the chain for use on future measurements. As this marking becomes worn or dull, re-mark it.
  - 1.9.4.6. If the length of the used portion of the chain exceeds the maximum allowable length the chain is deficient and must be replaced.
  - 1.9.4.7. Record the dead end length, live end length, number of links measured and the maximum allowable length, to three (3) decimal places, on the Test and Inspection Report. Also record the ID number and the calibration due date for the measuring instrument used.

Table A2.0, Chain Measurement Parameters Table

Chain Size		Number of Links to Measure
3/16"	0.188"	23
1/4"	0.250"	19
9/32"	0.281"	17
5/16"	0.313"	17
3/8"	0.375"	15
7/16"	0.438"	13
1/2"	0.500"	11

## 2. Periodic (New and Existing) Inspection

In addition to the frequent inspection, perform the following:

### 2.1. Hoist (Examine for)

- 2.1.1. Loose bolts, nuts, or rivets.
- 2.1.2. Evidence of worn, corroded, cracked or distorted parts such as load blocks, suspension housing, hand chain wheels, chain attachments, clevises, yokes, suspension bolts, shafts, gears, bearings, pins, rollers, and locking and clamping devices.
- 2.1.3. Evidence of damage to hook retaining nuts or collars and pins, and welds or rivets used to secure the retaining members.
- 2.1.4. Evidence of damage or excessive wear of load sprockets, idler sprockets, or hand chain wheel.
- 2.1.5. Evidence of worn, glazed, or oil-contaminated friction discs; worn pawls, cams or ratchet; corroded, stretched, or broken pawl springs in brake mechanism.
- 2.1.6. Warning labels including cautionary language against:

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- 2.1.6.1. Lifting more than rated load.
- 2.1.6.2. Operating hoist with twisted, kinked, or damaged chain.
- 2.1.6.3. Operating damaged or malfunctioning hoist.
- 2.1.6.4. Lifting people.
- 2.1.6.5. Lifting loads over people.
- 2.1.6.6. Operating the hoist with other than manual power.
- 2.1.6.7. Removing or obscuring labels.
- 2.1.7. Proper end connections of load chains
- 2.1.8. Deformed, cracked, or corroded members, including hangers and sway braces.
- 2.1.9. Loose or missing fasteners, such as bolts, nuts, pins, or rivets.
- 2.1.10. Cracked or worn sheaves, drums, or chain sprockets.
- 2.1.11. Worn, cracked, or distorted parts such as pins, bearings, wheels, shafts, gears, rollers, locking and clamping devices, bumpers, switch baffles, interlock bolts, and end stops.
- 2.1.12. Hooks and latches. Perform the frequent inspection described in paragraph 1.6, on ALL hooks, including semi-permanent hooks and those in inaccessible locations where frequent inspections were not feasible.
- 2.1.13. Hook attachment and securing means.
- 2.1.14. Excessive wear of brake system parts.
- 2.1.15. Excessive wear of chain drive sprockets and excessive chain stretch.
- 2.1.16. Deterioration of motors, controllers, master switches, contacts, limit device(s), and push-button stations.
- 2.1.17. Wind indicators for proper operation, if applicable.
- 2.1.18. Travel limit devices for proper performance. Each motion shall be inched or operated at low speed into the limit device with no load on the crane.
- 2.1.19. Hoist lower limit device of electric- or air-powered hoists, without a load on the hook. Care shall be exercised. The load block shall be inched into its limit device or run in a slow speed on a multi-speed or variable-speed hoist.
- 2.1.20. Warning device(s) for proper operation.
- 2.1.21. Inspect the wire rope or load chain as described in Paragraphs 1.1.8 (Hoist Rope) or 1.1.10 (Load Chain).

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- 2.1.22. Function, instruction, warning and safety information signs, labels, or plates for placement and legibility.
- 2.1.23. Operating mechanisms for proper operation, proper adjustment, and unusual sounds; such as, but not limited to, squeaking, grinding, grating, etc. See paragraph 2.1.32 below.
- 2.1.24. Oil level of hoist motor, trolley, and bridge gearboxes as applicable.
- 2.1.25. Excessive wear of trolley and bridge drive wheels.
- 2.1.26. Excessive wear or deformation of the load-carrying flange of all track sections in the system, both straight and curved.
- 2.1.27. Excessive wear of trolley and bridge guide and drive wheels.
- 2.1.28. Trolley adjustments and tolerances to manufacturer specifications.
- 2.1.29. Wear in brake and clutch system parts, lining pawls, and ratchets that are readily accessible without major disassembly beyond an acceptable limit.
- 2.1.30. Pitting or other signs of deterioration in electrical apparatus. Special attention shall be given to feed rails.
- 2.1.31. Evidence of overheating.
- 2.1.32. An operational test shall be performed with no load and shall include:
  - 2.1.32.1. Lifting and lowering.
  - 2.1.32.2. Trolley travel.
  - 2.1.32.3. Bridge travel.
  - 2.1.32.4. Upper limit device(s).
  - 2.1.32.5. Travel-limiting devices.
  - 2.1.32.6. Locking and safety devices for interlocking mechanisms, track switches, drop sections, and lift sections.
  - 2.1.32.7. Indicating devices, if provided

### 3. Load Testing

- 3.1. To determine if a load test is needed, and if so what type, see Table 1.0.
- 3.2. Record the test weight on the Test and Inspection Report included in this appendix.
- 3.3. Operation
  - 3.3.1. Check hoisting and lowering at various speeds, and braking/holding mechanisms. Verify holding brakes stop and hold a test load. The load should be for three (3)



minutes.

- 3.3.2. Check trolley and bridge travel at a maximum safe movement in all directions with varying speeds, ensuring that all major work areas are tested, i.e. not just one end of bridge and/or trolley.
- 3.3.3. Check all limit switches, locking devices, emergency stop switches, and other safety devices, excluding thermal overload and circuit breakers. The limit switch, emergency stop and locking device tests except for the final upper limit switch (in the case of a critical crane) shall be performed with no load on the hook at full speed.
- 3.3.4. If the crane is critical, both holding brakes must be tested to demonstrate their ability to stop and hold a rated load. If a worm gear is used as a holding brake, it shall be tested to ensure it is able to hold a static load and stop a dynamic load. Testing of the holding brakes may be done in one of the following ways:
  - 3.3.4.1. Each brake's ability to hold shall be statically tested (under no load) with 150% of the test load hoisting torque at the point of brake application.
  - 3.3.4.2. Alternately, each brake shall be tested for its ability to stop and hold a rated load in both the raising and lowering modes. (CAUTION: It must be possible to quickly reenergize the out-of-circuit brake or provide other safety measures to perform this test safely).
  - 3.3.4.3. Other methods as approved by the LDEM with concurrence from the responsible safety, engineering, operations, and maintenance organizations.
- 3.3.5. Post-Load Test Inspection - After the load test perform a post-load test inspection of the crane to ensure that there is no damage prior to the crane being released for service.

#### 4. Non-Destructive Inspection

- 4.1. Post Load Test – Surface NDI (Magnetic Particle or Liquid Penetrant) of the hook shall be completed during all post-load test inspections.
- 4.2. Suspicion of Cracks – Surface NDI (Magnetic Particle or Liquid Penetrant) of any part of the crane shall be completed if there is any suspicion of cracks.

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## Reports

### Overhead Cranes Test and Inspection Report

LDENo/ Report No:		Date of Inspection:	
Mfgr/Model #:		Date Next Periodic:	
Serial No:		Capacity:	
Location:		Inspection: Frequent <input type="checkbox"/> Periodic <input type="checkbox"/>	

Frequent Inspection					
Appendix	Source Specification	Hoist/Trolley	Pass	Fail	N/A
1.a.i.1	B30.16-2.1.2(c)(1)	Hoist Operation			
1.a.i.2	B30.16-2.1.2(c)(2)	Upper Limit Switch Operation			
1.a.i.3	B30.16-2.1.2(c)(3)	Hoist Brakes			
1.a.i.4	B30.16-2.1.2(c)(4)	Air/Hydraulic Systems, etc. for Leakage			
1.a.i.9	B30.16-2.1.2(c)(9)	Reeving			
1.a.ii	B30.11-2.1.4(d)(1)	Trolley/Bridge Operation			
1.a.ii	B30.11 Fig. 11-1.13-2	Distance Btwn Treadwheel and Flange			
1.a.iii	B30.11-2.1.4(d)(3)	Hydraulic Systems for Leakage			
1.a.v	B30.11-2.1.4(d)(6)	Warning Devices			
1.a.vi	B30.11-2.1.4(d)(8)	End Stops			
Appendix	Source Specification	Hook	Pass	Fail	N/A
1.a.vii.1	B30.10-1.10.5(a)-(b)	Identification			
1.a.vii.2-4	B30.10-1.10.5(c)-(d)	Cracks, Corrosion, Buckles, etc.			
1.a.vii.5	B30.10-1.10.5(e)	Wear or Deformation, Bending, Twisting			
1.a.vii.8	B30.10-1.10.5(h)	Threading mechanism			
1.a.vii.10-11	B30.10-1.10.5(i)-(k)	Threading mechanism			
1.a.vii.12	B30.10-1.10.5(l)	Exposure			
1.a.vii.13	B30.10-1.10.5(m)	Unauthorized Modification/Alterations			
1.a.vii.7	B30.10-1.10.5(g)	Hook Throat Measurement			
	Gauge Serial Number		Gauge Cal Due		
	Original Throat Opening (Inches)		0.000		
	Calculated Max (Lesser of 5% or 1/4" Increase)		0.000		
	Measured Throat Opening (Inches)		0.000		
Appendix	Source Specification	Hoist Rope	Pass	Fail	N/A
1.a.viii-ix	B30.16-2.4.1(a)(1)	Broken Wires, Damage, Corrosion, etc.			
		End Connections			
		Rope Diameter Measurement			
	Gauge Serial Number		Gauge Cal Due		
	Original Measured Diameter (Inches)		0.000		
	Calculated Minimum Diameter (Inches)		0.000		
	Measured Diameter (Inches)		0.000		
Appendix	Source Specification	Hoist Chain	Pass	Fail	N/A
1.a.x.1	B30.16-2.5.1	Smooth Operation			
1.a.x.2		Clean, Lubricated			
1.a.x.3		Gouges, Nicks, Distorted Links			
1.a.x.4		Chain Length Measurement			
	Gauge Serial Number		Gauge Cal Due		
	Number of Links Measured				
	Dead End Chain Length (Inches)		0.000		
	Live End Max - 1.5% Increase (Inches)		0.000		
	Measured Live End Length (Inches)		0.000		

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## Overhead Cranes Test and Inspection Report

Periodic Inspection					
Appendix	Source Specification	Overall-Visual	Pass	Fail	N/A
1.b.ii.1	B30.16-2.1.3(d)(2)	Loose Bolts, Nuts, Rivets			
1.b.ii.2-5	B30.16-2.1.3(d)(3)-(5)	Worn, Cracked, Corroded Parts			
1.b.ii.6	B30.16-2.1.3(d)(6)	Warning Labels			
1.b.iii	B30.11-2.1.5(d)(1)	Hangers and Sway Braces			
1.b.iv	B30.11-2.1.5(d)(2)	Loose or Missing Fasteners			
1.b.v	B30.11-2.1.5(d)(3)	Sheaves, Drums, Chain Sprockets			
1.b.vi	B30.11-2.1.5(d)(4)	Pins, Bearings, Wheels, Rollers, End Stop			
1.b.vii	B30.10-1.10.5(g)	Hook Unattainable For Freq. (Hanger)			
	Gauge Serial Number		Gauge Cal Due		
	Original Throat Opening (Inches)	0.000			
	Calculated Max (Lesser of 5% or 1/4" Increase)	0.000			
	Measured Throat Opening (Inches)	0.000			
1.b.viii	B30.11-2.1.5(d)(6)	Hook Attachment			
1.b.ix	B30.11-2.1.5(d)(7)	Brake System Parts			
1.b.x	B30.11-2.1.5(d)(8)	Main Sprockets			
1.b.xi	B30.11-2.1.5(d)(9)	Limit, Control Switches, Contacts			
1.b.xii	B30.11-2.1.5(d)(10)	End Insulators			
1.b.xiii	B30.11-2.1.5(d)(11)	Bridge Roller Devices			
1.b.iv	B30.11-2.1.5(d)(12)	Load Limit Switch			
1.b.xv	B30.11-2.1.5(d)(13)	Warning Devices			
1.b.xvi	B30.11-2.1.5(d)(14)	Entire Length of Wire Rope/Hoist Chain			
1.b.xvii	B30.11-2.1.5(d)(15)	Markings and Labels			
1.b.xix		All Oil Levels As Applicable			
1.b.xx-xxi	B30.11-2.1.5(d)(18)-(19)	Drive Wheels, Load-Bearing Track Flange			
1.b.xxii	B30.11-2.1.5(d)(20)	Trolley/Bridge Guide and Drive Wheels			
1.b.xxiii	B30.11-2.1.5(d)(21)	Trolley Adjustments and Tolerances			
1.b.xxiv	B30.16-2.1.3(d)(7)	Brake and Clutch Systems Parts, Pawls			
1.b.xxv	B30.16-2.1.3(d)(8)	Electrical System including Feed Rails			
1.b.xxvi	8719.9-4.4.5.b(12)	Overheating			
1.b.xxvii	B30.11-2.2.1	Operational Test of All Functions			
Appendix	Source Specification	Load Test	Pass	Fail	N/A
1.c	8719.9-4.3	Load Test			
	Criticality	Critical <input type="checkbox"/>	Non-Critical <input type="checkbox"/>		
		Post Load Test Inspection			
	Reason for Load Test	New/Repair/Alteration <input type="checkbox"/>	Periodic Load Test <input type="checkbox"/>		
	Type of Load Test	Proof Load Test (125%) <input type="checkbox"/>	Rated Load Test (100%) <input type="checkbox"/>		
	Last Load Test Date	Test Weight			
Appendix	Source Specification	Non-Destructive Testing	Pass	Fail	N/A
1.d	8719.9-7.4.5	Non-Destructive Testing			
	Reason for NDT	Suspicion of Cracks <input type="checkbox"/>	Hook Post-Load Test <input type="checkbox"/>		
	Type of NDT	Magnetic Particle <input type="checkbox"/>	Liquid Penetrant <input type="checkbox"/>		

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### Overhead Cranes Test and Inspection Report

<b>Overall Inspection Results</b>		Acceptable <input type="checkbox"/>	Not Acceptable <input type="checkbox"/>
<b>Inspector</b>	Signature	Date	
<b>Inspector</b>	Signature	Date	
<b>Lead Group Lead/LDE Eng A</b>	Signature	Date	
<b>E S</b>	Signature	Date	
<b>LDE Manager/Engineer Approval</b> (Only needed for Periodic Reports)	Signature	<input type="checkbox"/> Certified	Date
		<input type="checkbox"/> Not Certified	
<b>Remarks:</b>			

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## CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	04/22/2013	Initial Release

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